UNITED STATES
v.
LEROY H. CLOUSER
SHARON CLOUSER

IBLA 92-213 Decided May 22, 1998

Appeal from a decision of Administrative Law Judge Harvey C. Sweitzer declaring six lode mining claims null and void. OR MC 23893 through OR MC 23898.

Affirmed as modified.

1. Mining Claims: Determination of Validity--Mining Claims: Discovery: Geologic Inference--Mining Claims: Discovery: Marketability--Mining Claims: Marketability

A decision of an administrative law judge holding lode mining claims null and void on the ground claimants failed to overcome the Government's prima facie case of the lack of discovery of a valuable mineral deposit will be affirmed where claimants failed to demonstrate, by a preponderance of the evidence, that the claims encompass mineralization of sufficient quality in sufficient quantity to justify a prudent man in the further expenditure of his labor and means with a reasonable prospect of success in developing a paying mine. A valuable mineral deposit is not demonstrated where it is shown that either a claim does not contain consistent mineral values in any structure such that a body of ore of any quality and quantity can be projected or when any deposit that can be projected cannot be extracted, processed, and marketed at a profit.

APPEARANCES: Roger F. Dierking, Esq., and Philip F. Schuster, II, Esq., Portland, Oregon, for Appellants; Arno Reifenberg, Esq., Office of the General Counsel, U.S. Department of Agriculture, Portland, Oregon, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE GRANT

Leroy H. and Sharon Clouser have appealed from a Decision of Administrative Law Judge Harvey C. Sweitzer, dated December 30, 1991,

declaring the Robert E. Nos. 1 through 6 lode mining claims, OR MC 23893 through OR MC 23898, null and void for the lack of discovery of a valuable mineral deposit. 1/

The subject mining claims, located in 1960 (Nos. 1 through 5) and 1973 (No. 6), are situated in secs. 14 and 23, T. 38 S., R. 10 W., Willamette Meridian, Curry County, Oregon, within the Siskiyou National Forest. This land was designated part of the Kalmiopsis Wilderness Area on September 3, 1964, pursuant to section 3(a) of the Wilderness Act, 16 U.S.C. § 1132(a) (1994). Effective January 1, 1984, it was withdrawn from appropriation under the mining laws, pursuant to section 4(d)(3) of the Wilderness Act, as amended, 16 U.S.C. § 1133(d)(3) (1994). That withdrawal was subject to valid existing rights.

On February 1, 1988, the Bureau of Land Management (BLM) filed a contest complaint on behalf of the Forest Service, U.S. Department of Agriculture (Forest Service), charging that a valuable mineral deposit had not been discovered within the limits of any of the claims as of December 31, 1983, the date of withdrawal of the claims, and did not exist at the present time. 2/

An evidentiary hearing was held before Judge Sweitzer over a span of 11 days including May 17-19; August 1-4, 6; and December 17-19, 1990, in Grants Pass, Oregon City, and Portland, Oregon. At the conclusion of the hearing and after carefully considering all of the evidence, Judge Sweitzer issued his Decision. The Administrative Law Judge concluded that the Government had established a prima facie case that none of the claims was supported by the discovery of a valuable mineral deposit and that the claimants had failed to overcome that case by the preponderance of the evidence.

It is undisputed that the subject mining claims were located in 1960 and 1973 in an area where significant gold deposits had been discovered in the early 1900's. See Ex. 16 at 3. 3/ The gold was found in quartz veins embedded in fractures in greenstone. See Tr. 431; Ex. 16 at 4; Ex. 21 at 10. Claims had originally been located at the site in 1919 and extensive mining activity had taken place thereafter. See Ex. 16 at 3. Approximately 2,000 feet of underground drifts, crosscuts, and raises had been

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1/ In their notice of appeal from Judge Sweitzer's Decision, the Clousers state that the record title interest of Ralph E. Kaiser, the original locator of all of the mining claims, was transferred to them "prior to the hearings." The caption of this case reflects the owners of record at the time the contest was filed.

2/ The actual date of withdrawal was Jan. 1, 1984. See 16 U.S.C. § 1133(d)(3) (1994).

3/ The page number references for the various exhibits refer to the pages of the exhibit itself rather than the page number of any excerpt from a treatise contained in the exhibit.

run at various levels by 1933. See Ex. 16 at 3; Ex. K at 2. In 1928, a small rich ore shoot was found in the No. 4 drift, now located on the Nos. 1 and 2 claims. See Ex. 2; Ex. 16 at 3. Over 3,800 ounces of gold were reportedly removed from the mine. See Ex. K at 3. One lot of sulphide ore from the drift was reported in 1933 to contain 15.365 ounces of gold per ton. See Ex. 16 at 5. The ore removed over the years was reported to average 2.2 ounces of gold per ton. See Ex. AA at 3; Ex. K at 7.

The claims were first examined by Gordon Lyda, a Government mineral examiner, in 1985. See Tr. 22. He took 11 samples (Nos. 85-009 through 85-019) from all but the No. 6 claim. See Tr. 26. The samples were fire assayed and the results are reported in Exhibit No. 3. The contest complaint was filed in February 1988. On May 25, 1989, following a prehearing conference, Judge Sweitzer issued an order postponing the scheduled hearing in order to permit the claimants and the Forest Service, at their request, to engage in a joint examination of the claims, following efforts by the claimants to rehabilitate underground workings. Twenty-eight samples were taken in October 1989 from all but the No. 6 claim, and split between the parties. See Tr. 27. The split samples were separately assayed by the parties and the results are reported in Exhibit Nos. 4 and 5 (Forest Service - Nos. 89-020 through 89-047) and Exhibit Nos. 6 and H (claimants - Nos. 101A, 101B, 102 through 128). See Tr. 28-29, 29. The Government's 1989 samples were reassayed in June 1990 in an effort to ensure that the entire gold content of the samples was accounted for, including any "coarse gold." 4/ See Tr. 926-28; Ex. 25 at 3.

In May 1990, all of the claims (with the exception of the No. 6), along with all the underground workings, were examined by Reb Bennett, another Government mineral examiner. See Tr. 339-40. The claims were also examined by the claimants' mineral experts. Nicholas Barr examined the claims on 3 days in 1989, and took 14 samples from the Nos. 1, 3, and 5 claims in April 1989. See Tr. 394, 399-400. The fire assay results of these samples (Nos. 415A through 415N) are reported in Exhibit No. I. Thomas S. Bonn, an independent mine operator who testified on behalf of the claimants, examined the claims in May 1990, and took samples from the stope area in the No. 5 claim. See Tr. 190, 277. These samples were not assayed. The claimants have also submitted the results of 10 samples (Nos. PM 001, RBE-001 through RBE-007, RBE-008S, and RBE-009S) taken by

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4/ Coarse gold or the nugget effect refers to small particles of gold having a high value that are found in the deposit. See Tr. 144, 614. The difficulty posed by coarse gold particles is the lack of uniform distribution of the gold in the sample which may cause an unrepresentative assay. See Tr. 620. When assaying samples believed to contain coarse gold, the sample is screened or sieved to separate any visible particles of gold which are then weighed and included in the calculation of the gold value. See Tr. 619-20, 1211.

Calloway & Good Exploration (C & G) in 1985. The results are reported in Exhibit Nos. A, D, and Y. The results of an additional 32 samples taken by J.E. Morrison in 1939 (Nos. 1 through 4), the Bureau of Mines in 1976 (Nos. PK 1 through PK 11, RE-1 through RE-16), and Len Ramp in 1982 (No. PR061) are also reported on Exhibit Nos. D and Y.

[1] In order to be valid and thus subject to patent, a mining claim must contain within its boundaries a "valuable mineral deposit" (30 U.S.C. § 22 (1994)). See 30 U.S.C. § 29 (1994); Best v. Humboldt Placer Mining Co., 371 U.S. 334, 335 (1963); United States v. Williamson, 45 IBLA 264, 277-78, 87 I.D. 34, 41-42 (1980). Such a deposit consists of a deposit of minerals of such quality and in such quantity as to warrant a person of ordinary prudence in the further expenditure of his labor and means with a reasonable prospect of success in developing a valuable mine. See Chrisman v. Miller, 197 U.S. 313, 322 (1905). It is further said that a mineral deposit will be considered valuable where there is a reasonable likelihood that the value of the deposit exceeds the costs of extracting, transporting, processing, and marketing it. See United States v. Coleman, 390 U.S. 599, 600, 602-03 (1968); In Re Pacific Coast Molybdenum Co., 75 IBLA 16, 29, 90 I.D. 352, 360 (1983). A deposit of sufficient size and value need not be actually "blocked out." See United States v. Hooker, 48 IBLA 22, 30 (1980); United States v. Pressentin, 71 I.D. 447, 451 (1964), aff'd, Pressentin v. Udall, No. 1194-65 (D.D.C. Mar. 19, 1969). Nor must the deposit be actually mined and milled at a profit or the profitability of mining and milling that deposit be guaranteed. See Barton v. Morton, 498 F.2d 288, 289, 291-92 (9th Cir.), cert. denied, 419 U.S. 1021 (1974); Barrows v. Hickel, 447 F.2d 80, 82 (9th Cir. 1971); United States v. Mannix, 50 IBLA 110, 117, 119 (1980); United States v. Hooker, supra, at 29.

In the case of land withdrawn from mineral entry, a valuable mineral deposit must be shown to have existed on the claim as of the date of the withdrawal, as well as of the date of the hearing. See United States v. Hooker, supra, at 29. The reason is that, in the absence of a discovery, the land was withdrawn from appropriation under the mining laws, and the unpatented claim deemed void. See Andrew J. Van Derpoel, 33 IBLA 248, 250 (1978).

Where the Government contests a mining claim because it is not supported by the discovery of a valuable mineral deposit, it bears the initial burden of making a prima facie case that no discovery exists, whereupon the burden shifts to the claimant to establish by a preponderance of the evidence that a discovery exists as to those matters placed in issue by the Government. See United States v. Springer, 491 F.2d 239, 242 (9th Cir.), cert. denied, 419 U.S. 834 (1974); United States v. Hooker, supra, at 26-27. The ultimate burden of proof on these matters rests with the claimant. See United States v. Taylor, 19 IBLA 9, 22-23, 82 I.D. 68, 73 (1975). Thus, as the Board observed in Taylor: "[A]ny doubt on the issue of discovery raised by the evidence must be resolved against the mining claimant, who bears the risk of nonpersuasion. * * * Where the claimant has failed to

meet his burden of proof on discovery, the Judge must find that there has not been a discovery." Id. at 24-25, 82 I.D. at 74. If the claimant however overcomes the Government's prima facie case, the contest would be dismissed. See United States v. Lewis, 58 IBLA 282, 289-90 (1981); United States v. Taylor, supra, at 25, 82 I.D. at 74.

Judge Sweitzer found initially that the Government had established a prima facie case of the lack of discovery of a valuable mineral deposit based on the testimony of two qualified Government mineral examiners. See Decision at 11. We agree. The testimony by Gordon Lyda and Reb Bennett, the Government mineral examiners, was that, based on their on-the-ground survey of the claims and evaluation of the mineral values disclosed by the sampling conducted in 1985 and 1989 by the Government either alone or jointly with the claimants, none of the claims had minerals of sufficient quality in sufficient quantity to justify a prudent man in the further expenditure of his labor and means with a reasonable prospect of success in developing a paying mine. See Tr. 95, 348, 360. At best, they concluded that the claims exhibited "isolated high values." (Tr. 348.) The testimony was sufficient to establish a prima facie case of the lack of a discovery on each of the claims. See Hallenbeck v. Kleppe, 590 F.2d 852, 859 (10th Cir. 1979); United States v. Chappell, 72 IBLA 88, 93 (1983); United States v. Hooker, supra, at 28.

Appellants contend that a discovery has been shown on claim Nos. 1 through 5 by a preponderance of the evidence and that the Administrative Law Judge erred in reaching a contrary conclusion. Key to this argument is the contention that samples relied upon by Contestant's witnesses and the Administrative Law Judge were unrepresentative. The analysis of the quality and quantity of minerals on the subject claims by the Government mineral examiners was based on the Government's sampling in 1985 and its joint sampling with the claimants in 1989. Appellants challenge any reliance on the 1989 sampling, asserting that there were flaws in the sampling methods that undermine the reliability of the assay results and reliance thereon by the Administrative Law Judge. They contend first that the "differences" in results between the 1985 and 1989 samples is itself indicative that the 1989 samples were not properly taken, processed, and assayed. (Statement of Reasons for Appeal (SOR) at 11.) We are not persuaded by such reasoning. As Judge Sweitzer correctly noted, differences in assay results may merely indicate that the 1985 and 1989 samples were taken from different locations or that, even if they were taken in close proximity, the mineral values are unevenly distributed. See Decision at 14; see also Tr. 193-95, 199, 285, 622-23. Differences do not necessarily establish that the 1989 samples were improper or unrepresentative.

Appellants contend that the 1989 samples were improperly taken by Lyda by the method of chip sampling, rather than channel or chip-channel sampling. See SOR at 21. The evidence indicates that channel or chip-channel sampling is the technique of choice for assessment of the amount of gold to be found in a deposit. See Ex. JJ at 6; Ex. 27 at 2; Tr. 107, 340-41, 342-44, 454, 476. As proof that Lyda engaged in chip sampling, Appellants rely

on his notes and testimony labelling his sampling method. See SOR at 22 (referring to Tr. 106; Ex. 48 at 2, 4, 5.) Lyda's characterization of his sample method was clarified, however, in testimony at the hearing. Based on his observation of the sample sites and Lyda's description of his sampling method, Bennett properly characterized the method used as chip-channel sampling. See Tr. 146, 178-79, 348, 367. Appellants have not refuted that testimony. Therefore, we find, as did Judge Sweitzer, that Lyda properly engaged in chip-channel sampling. See Decision at 15.

Appellants also contend that the 1989 samples were unrepresentative because they contained an inadequate amount of material. The evidence is that the 1989 samples were generally between 5 and 6 pounds, with 1 sample between 15 and 20 pounds. See Tr. 135-36. Judge Sweitzer found, on the basis of the testimony of Baylor Reiner, a chemist for an assaying firm, that an average size sample is 5 pounds. See Decision at 16 (referring to Tr. 615). Appellants, however, refer to testimony that larger samples are better, and that the minimum size should be 10 pounds where the vein contains coarse gold. See Tr. 195, 369-70, 398-99, 414, 479, 1342. It appears from the record that relatively larger samples have advantages when gold in the deposit is not uniformly distributed as in the case of coarse gold, in order to accurately judge the average gold content of any segment of the deposit. (SOR, Appendix at 2 (Handbook for Mineral Examiners (H-3890-1) (Mar. 17, 1989), at IV-1)). However, the overriding concern is with obtaining a "representative" sample. Id.; see Tr. 477. There is no evidence that the sizes of the samples taken in 1989 were not representative of the gold to be found within the deposit. Thus, we are not persuaded that those samples should have been disregarded. See United States v. Murdock, 65 IBLA 239, 242-43 (1982).

Appellants next contend that the 1989 samples were unrepresentative due to the fact that they were not properly crushed. They assert that the samples were crushed and separated while wet, thus leaving a residue on the equipment which distorted sample results. Appellants' experts testified that there is a potential for loss of value from wet clay sticking to equipment when crushing and splitting wet samples (Tr. 416) and opined that this could account for differences between 1985 and 1989 sample assays. (Tr. 416-17.) However, as the Administrative Law Judge found, the factual observation of Appellant Leroy Clouser who was present at the sampling and participated in the crushing was that there was no apparent residue on the equipment, noting "it looked like it was fairly clean." (Tr. 881.) In this context, we are unable to find that Appellants have shown that the Administrative Law Judge erred in considering the 1989 samples.

Claimants rely heavily on the doctrine of geologic inference in support of their assertion of a discovery. That doctrine permits the dimensions of a mineral deposit to be defined by extrapolating, in accordance with sound geologic principles, from surface and underground exposures of the deposit. See United States v. Dresselhaus, 81 IBLA 252, 268 (1984); United States v. Feezor, 74 IBLA 56, 71, 90 I.D. 262, 270 (1983), vacated in part on other grounds and remanded, 81 IBLA 94 (1984); United States v.

Hooker, supra, at 30; United States v. Larsen, 9 IBLA 247, 261-62 (1973), aff'd, Larsen v. Morton, No. 73-119 Tucson (JAW) (D. Ariz. Sept. 24, 1974); United States v. Harenberg, 9 IBLA 77, 83 (1973). Thus, the various dimensions of an ore body may be reasonably inferred based on factors such as the similarity of geologic formations on a particular claim and in the surrounding area, as evidenced in nearby workings. See United States v. Larsen, supra, at 262.

Geologic inference may not be employed in the absence of evidence of the existence of a mineral deposit. See United States v. Feezor, supra, at 71, 90 I.D. at 270. Mineral values must be physically disclosed before they may be projected by geologic inference. See Henault Mining Co. v. Tysk, 419 F.2d 766, 768 (9th Cir. 1969), cert. denied, 398 U.S. 950 (1970); United States v. Dresselhaus, supra, at 268; United States v. Feezor, supra, at 80-81, 90 I.D. at 276. That generally occurred here as a result of sampling. 5/ Regardless of the fact that a mineral deposit has been shown by sampling on claims other than No. 6, Judge Sweitzer concluded that geologic inference may not be used to project the extent of a mineral deposit on claim Nos. 1 through 5 because the evidence did not show relatively consistent mineral values that may reasonably be projected throughout the inferred structure. See United States v. Feezor, supra, at 78-79, 90 I.D. at 274-75; United States v. Chambers, 47 IBLA 102, 107 (1980). 6/

Appellants, however, contend that there is a continuity of mineralization on each of the claims that can be projected, by geologic inference, so as to establish a valuable mineral deposit on the claim. They start by objecting to Judge Sweitzer's determination of the mineral values to be found on each of the claims.

Appellants contend that Judge Sweitzer improperly failed to reach a conclusion whether certain samples, i.e., Nos. 89-033 to 89-035, 114 to

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5/ No samples were taken in the case of the No. 6 claim because the claimants failed to identify any "discovery points," i.e., an exposure of valuable minerals. See Tr. 62, 807; Ex. J at 14. The Government mineral examiners were not required to uncover discovery points. See Hallenbeck v. Kleppe, supra, at 859; United States v. Chappell, supra, at 93. It was sufficient for purposes of establishing a prima facie case that they did not observe any exposure of valuable minerals on the claim. See United States v. Mavros, supra, at 307-08; United States v. Chappell, supra, at 93; United States v. Hooker, supra, at 28. The claimants failed to overcome that case where they presented no evidence regarding any mineralization to be found on the claim. See Ex. CC. Thus, the claim was properly declared invalid. See United States v. American Independence Mines & Minerals, 122 IBLA 177, 182, 184 (1992).

6/ While testimony of claimants' experts regarding the geology of the area and experience with successful development of similar deposits may be relevant to application of geologic inference to project the extent of a deposit, "isolated and erratic high values are simply incapable of giving rise to an inference that better values exist someplace on a claim." United States v. Feezor, supra, at 78, 90 I.D. at 274.

116, and 415L, were taken from the No. 1 or No. 2 claim. We note that the Judge was unable to do so, based on the fact that there was a conflict in the testimony and exhibits that he simply could not resolve. See Decision at 4, 21. We agree. The samples are admittedly on or very near the boundary line between the claims. See SOR at 80. Further, the evidence is in conflict between the testimony of Lyda, Barr, and Sharon Clouser. See Tr. 44-45, 406, 601, 674, 1038; Ex. 48 at 3; Exs. B, D, and Y. There has never been an official mineral survey. In the end, we need not resolve this question because, whether we consider the samples to be within either the No. 1 or No. 2 claim, there is still an erratic distribution of mineral values, thus precluding a geologic projection of a mineral deposit of any particular quality on either claim.

Appellants further contend that certain samples were improperly included by Judge Sweitzer in determining whether a valuable mineral deposit is to be found on any of the claims.

Appellants first object to the inclusion of sample Nos. 89-024 through 89-026, PK-1 through PK-6, PK-8, and PK-9, in the case of the No. 1 claim, on the ground they were taken outside the discovery area on the claim, i.e., a vein in the drift in the No. 3 tunnel starting about 120 feet north of the portal. (SOR at 83.) Appellants contend samples PK 1 through 3 were surface samples randomly taken. Id. These samples disclosed values of 0.007 oz./ton (No. 89-024), 0.002 oz./ton (No. 89-026), a trace (PK-1), and no gold (PK-2 through PK-6, PK-8, and PK-9). See Ex. 25 at 3; Ex. D. It is true that these samples were not taken from the section of vein about 120 feet north of the portal in the No. 3 tunnel. See Exs. C and D. We note, however, the testimony of Sharon Clouser with respect to the location of the discovery point varied somewhat from Appellants' assertion on appeal. Thus, she testified to discovery points at the apex of the vein on the surface exposure in the road cut at the northern claim boundary at the point on the plan shown by the blue triangle (Ex. D, Reference 1 (85-018)) and in the reopened level 3 workings. See Tr. 796-8. As respondent points out, the fact that samples PK-1 and 2 were taken in the road cut and PK-3 was in close proximity refutes the contention that these were random samples. See Ex. D, Respondent's Reply Brief at 53. Even focusing on the single discovery area now emphasized by Appellants, it is clear from sample Nos. 415L; PK-1 through 3; 89-33 through 35; 114 through 116; 85-18; 89-20, 89-23; and 101A, 101B, 104 that there is an erratic distribution of mineral values, thus precluding a geologic projection of a mineral deposit of any particular quality on the No. 1 claim. Indeed, the values disclosed by the samples range from a trace to 0.243 oz./ton, averaging 0.062 oz./ton. 7/

7/ Appellants would also include sample Nos. PK-7, 10, and 11 as representative samples on Claim 1. (SOR at 84-85.) However, these are also located remote from the discovery area and sample PK-11 appears to be a dump sample which is not representative of mineral in place. A showing of mineral values in a sample taken from a pile of loose material on a mine dump, with no evidence of the origin of that material, is not probative of the existence of a valuable mineral deposit. United States v. Mavros, 122 IBLA 297, 306 (1992); see United States v. Parker, 82 IBLA 344, 356-57, 368-69, 91 I.D. 271, 278-79, 285-86 (1984).

Applying a 90-percent mining recovery rate 8/ reduces this average value to 0.056 oz./ton, well below Appellants' projected "cut-off grade" of 0.128 oz./ton which the Administrative Law Judge found to be reasonable "assuming" the claimants' cost and revenue estimates are accurate. (Decision at 29.) 9/ This value would be reduced even further in order to properly account for a minimum 3-foot mining width.

Appellants next object to the inclusion of sample Nos. 89-036 and 89-037, in the case of the No. 2 claim, where they were taken outside the discovery point on the claim, which was close to the southern boundary line of the claim near the location of sample No. 85-018. We agree. These samples both disclosed values of less than 0.002 oz./ton. See Ex. 4; Ex. 25 at 3. However, they were taken from a different location than the other samples on the claim, were not taken from an identified vein, and were taken from an outcrop that revealed no evidence of mineralization. See Tr. 46; Ex. 48 at 4; Ex. D. Thus, they do not reflect other mineralization on the claim and should have been excluded. Nevertheless, even excluding these samples, it is clear that there is an erratic distribution of mineral values, thus precluding a geologic projection of a mineral deposit of any particular quality on the No. 2 claim. Indeed, the values (disclosed by sample Nos. 85-018, 89-033 through 89-035, 114 through 116, and 415L) range from 0.019 to 0.243 oz./ton, averaging 0.103 oz./ton. See SOR at 85. Again, applying 90-percent mining recovery rate reduces this average value to

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8/ Reb Bennett testified that an appropriate mining width for stope mining involved here would be between 3 and 4 feet (Tr. 345) and he used this mining width in his calculations. (Tr. 1142-43; Ex. 37.) Bennett concluded that, due to the fact that mining would inevitably recover resources containing no gold values, the expected recovery should be decreased by 10 percent to account for this. See Tr. 347, 1142. However, he did not dilute the sample values in instances where the sample widths exceeded 3.3 feet in the case of a projected 3-foot mining width and 6.05 feet in the case of a projected 5.5-foot mining width, because the values were deemed to extend across the entire actual mining width. See Ex. 37, at 1; Ex. 38, at 1. Appellants have not challenged this 90-percent mining recovery rate, and we adopt it here.

9/ The "cut-off grade" for a viable mining operation is the lowest grade of the mineral resource that would have to be recovered in order for the revenues derived from mining and milling to cover the costs thereof, and leave a profit. See United States v. Dresselhaus, supra, at 264 n.11, citing U.S. Department of the Interior, Bureau of Mines, A Dictionary of Mining, Mineral, and Related Terms 294 (1968). Appellants have calculated this formula by dividing the total costs for mining and processing a ton of resources by the product of the price of gold times the mill recovery rate of 80 percent. (Contestee's Opening Brief at 64.) Appellants adopted an 80-percent milling recovery rate. See Tr. 824; Ex. CC. Bennett made a similar allowance for losses that would inevitably occur during milling operations. See Tr. 1145.

0.092 oz./ton, well below Appellants' projected cut-off grade of 0.128 oz./ton. This value would be reduced even further in order to properly account for a minimum 3-foot mining width. Further, we note that all the samples available are located in one surface location. See Ex. D. Sample No. 415M taken by Barr across a zone of vein material approximately 20 feet to the east of sample 415L reflected a value of less than 0.003 oz./ton. (Ex. I, Tr. 406.) 10/ Hence, the evidence supports the finding of the Administrative Law Judge that the values disclosed are too erratic to support a geologic inference of a minable deposit.

Appellants contend that certain samples were improperly excluded by Judge Sweitzer in determining whether a valuable mineral deposit is found on any of the claims. Appellants first object to the exclusion of sample Nos. 89-044, 89-047, 125, 128, 415B, and 415E, in the case of the No. 3 claim, and sample Nos. 89-043 and 124, in the case of the No. 4 claim. (SOR at 69-71, 88.) These samples revealed gold values of 0.135, 0.197, 0.113, 0.190, 0.052, 0.064, 0.086, and 0.067 oz./ton. See Exs. 4, 5, 6, H, and I. Judge Sweitzer's Decision indicates that these samples were excluded because he concluded that they were taken parallel to, rather than across, the strike of the vein, and thus did not properly represent the mineralization to be found therein. See Decision at 7. He based his determination that samples should be taken across the strike of the vein on a treatise (Mining Geology (1948)) by Hugh Exton McKinstry, a noted geology professor, whose work is relied upon by both parties. See Decision at 19. Indeed, we find that McKinstry recommends taking samples across, rather than along, the strike of a vein, thus cutting across all of the mineralized bands in the vein. See Ex. JJ at 3-4. The purpose is to obtain an indication of the value of all of the vein material that would be mined at a certain point within a particular mining width. See Tr. 49. It is not sufficient to sample only a portion of the vein width, especially along the edges or in the center of the vein. See Tr. 389, 1045-46. We can find no endorsement of sampling along the strike of a vein in McKinstry's treatise or in the testimony by any expert. The record supports the conclusion that sample Nos. 89-044, 89-047, 125, 128, 415B, 415E, 89-043, and 124 were taken along the strike of the vein. See Tr. 49-51, 403-404, 492-93; Ex. 48 at 5-6. There is no evidence that the samples were cut across the vein, either perpendicular to the vein walls or at an angle. 11/ Thus, such

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10/ Appellants projected a mineral deposit of 5,111 tons between levels 3 and 4 on claim 2, but presented no samples of the vein at level 3 or 4 on claim 2. (Exs. D, J.)

11/ Such sampling is permitted by McKinstry:

"Most orebodies have some semblance of banding or layering. * * * Since the distribution of metals is apt to follow such banding, a sample taken across it so as to include all of the bands is likely to be the most representative. Although a sample taken at right angles to the plane of layering will give the shortest length of cut, the channel may cross the layers at any convenient angle so long as it cuts all of the layers and cuts them all at the same angle."

Ex. JJ at 3-4 (emphasis added). While we recognize that a bulk sample which includes the full width of the vein may be representative of the mineral material in the vein, that is not the nature of the samples here.

samples were properly excluded by Judge Sweitzer. 12/

Discounting those samples that are not considered to represent the true extent of mineralization in the veins, 13/ it is evident that the claims contain mineral values that were properly characterized by the Government mineral examiners as "erratic." (Tr. 38.) In the case of the No. 3 claim, the 11 samples range from a trace of gold to 1.03 oz./ton. While the arithmetical average of the samples is 0.166 oz./ton, this is largely attributable to 2 samples at the same location in the drift which were significantly higher in value than the rest. See Ex. F. Samples taken at other points in the drift were substantially lower. Bennett noted that the surface outcrop of the vein projected by claimants was not apparent and also noted the absence of any samples taken at the surface. (Tr. 1123.) In the case of the No. 4 claim, the 3 samples range from a trace of gold to 0.005 oz./ton, with an arithmetical average of 0.003 oz./ton. Despite suggestions by Appellants to the contrary, we find that the evidence did not demonstrate that there was a continuity of valuable mineralization on any of the claims.

After reviewing the evidence with respect to claim Nos. 1 through 5, Judge Sweitzer found that "because no mineral deposit was disclosed on such claims, but only isolated mineralization, Messrs. Barr and Bonn improperly relied upon geological inference, using nonrepresentative samples, historic data, and other information, to support their opinions that these claims each contained a valuable mineral deposit." (Decision at 23.) After reviewing the record on appeal, we agree that the claimants failed to establish that the claims contain a deposit of sufficient quality in sufficient quantity to justify a prudent man in the further expenditure of his labor and means with a reasonable prospect of success in developing a paying mine. At best, the claimants demonstrated that the claims contain isolated high gold values that are not shown to continue to any extent.

12/ Appellants assert that they were inexperienced, that they relied upon the expertise of Lyda in sampling the claims, and that Lyda was under a duty to take samples across the vein regardless of any contrary instructions from claimants. See Appellants' Response to Forest Service Answer at 23.) Appellants use the fact that Lyda took samples along the vein to question his competence as a mineral examiner. See Appellants' Response to Forest Service Answer at 24. The record indicates that the samples were taken by Lyda at the request of claimants despite his opinion that they were not valid. See Tr. 49, 439. In any event, we note that nothing in Lyda's sampling efforts precluded or even inhibited the claimants from entering any of the claims or, ultimately, demonstrating the discovery of a valuable mineral deposit on any of them by taking their own samples or otherwise. See Appellants' Response to Forest Service Answer at 28-29.

13/ Samples taken from the floor of a drift (Nos. 89-021, 89-022, 102, and 103) and selected samples (Nos. RBE-002 and RBE-003) were also properly excluded. Lyda testified that material sampled from the floor of the drift is not mineral in place and there is no way to tell where it came from. (Tr. 35-36); see Tr. 1099-1100; Ex. JJ at 5.

Such values have long been considered insufficient to demonstrate the discovery of a valuable mineral deposit where (as here) there is no corroboration of any continuity of such mineralization beyond the particular isolated location(s) or for any distance along a vein or elsewhere. See Barton v. Morton, supra, at 291; United States v. Feezor, supra, at 78-79, 90 I.D. at 274-75; United States v. Weekley, 86 IBLA 1, 6 (1985); United States v. Ramsher Mining & Engineering Co., Inc., 13 IBLA 268, 273 (1973), aff'd, Ramsher Mining & Engineering Co. v. Secretary of the Interior, No. 74-3062-WMB (C.D. Cal.), aff'd, 544 F.2d 526 (9th Cir. 1976); United States v. Harper, 8 IBLA 357, 370 (1972).

In his Decision, Judge Sweitzer acknowledged that although the samples for claim No. 5 similarly revealed "erratic" mineral values (see Tr. 58, 100-01, 102), he found that the inconsistency was "less" and the average value "much higher," than in the case of the other claims. See Decision at 23. Accordingly, the Administrative Law Judge further analyzed the evidence regarding the quality and quantity of the mineral deposit exposed on claim No. 5.

Barr, one of the claimants' experts, concluded that the No. 5 claim contains deposits totalling 1,063.5 tons of measured resources and an additional 1,634.3-ton deposit of indicated resources. 14/ See Tr. 429-31; Ex. 19. He based this conclusion on a determination of the dimensions of two vein structures observed on the claim in underground workings.

Barr calculated the dimensions of the first structure (known as the "Robert E. vein"), arriving at a length of 60 feet, a width of 2.8 feet, and a dimension up dip to the surface of 50 feet. See Tr. 429; Ex. J at 13; Ex. 19. 15/ As such, he determined that the deposit contained 746.7 tons of measured resources, having an average grade of 0.134 oz./ton. 16/ See Tr. 429; Ex. B; Ex. J at 13; Ex. 19. Barr projected the vein along the drift for a total of 118 feet, at a width of 2.8 feet. Based on a projected down dip extension of 39 feet, he determined that it contained an additional 1,145.4 tons of indicated resources, also having an average grade of 0.134 oz./ton. See Tr. 430; Ex. B; Ex. J at 14; Ex. 19.

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14/ The definitions of measured and indicated resources are taken from United States v. Feezor, supra, at 84, 90 I.D. at 277-78 (quoting from Principles of the Mineral Resources Classification System, U.S. Geological Survey Bulletin 1450-A, at A3-A4). See Ex. 18.

15/ The length of the Robert E. vein along the strike was actually measured by Barr as 78 feet. (Tr. 539-40.) In using a length of 60 feet in his calculations, Barr was subtracting the 18-foot length of the vein under the stope/raise which he regarded as a divergent structure. See Ex. 19; Tr. 429.

16/ Barr arrived at a tonnage figure on the basis that there was 1 ton of resource for every 11.25 cubic feet of resource. See Tr. 491-92; Ex. 19. The Government does not dispute this figure, though Bennett believed that the factor should actually be 12, due to the particular nature of the mineral deposit. See Tr. 1274-75.

Barr next measured the second structure (known as the "Stope West Drift"), arriving at a length of 20 feet, a width of 5.5 feet, and an up dip extension of 50 feet. See Tr. 430; Ex. J at 14; Ex. 19. Thus, he determined that it contained 316.8 tons of measured resources, having an average grade of 0.668 oz./ton. See Tr. 430; Ex. B; Ex. J at 14; Ex. 19. Barr also projected a 25-foot down dip extension of the raise structure over a vein strike length of 40 feet, at a width of 5.5 feet and a depth of 25 feet. See Tr. 430; Ex. J at 14; Ex. 19. Based on this, he calculated an additional 488.9 tons of indicated resources, also having an average grade of 0.668 oz./ton. See Tr. 430-31; Ex. B; Ex. J at 14; Ex. 19.

Judge Sweitzer in his Decision was unable to accept Barr's assessment of the quantity and quality of mineral material found on the No. 5 claim. The Administrative Law Judge noted key shortcomings in the evidence presented by claimants. First, he noted that the projections of quantity and quality were based on the data shown in Exhibit Y which he found to be unreliable. This finding of the unreliability was based on the selective use of higher sample values while omitting lower sample values, inaccurate sample dimensions affecting claimants' weighting of particular samples, failure to weight samples by mining width and area of influence, and use of unrepresentative samples taken along the vein. (Decision at 5-9, 24.) With respect to the projection of the vein structure observed in the west drift and in the west drift stope upwards to the surface, Bennett pointed out that in the absence of any samples in the structure at the surface, projection of values to the surface was a matter of "conjecture." (Tr. 1042-43.) Further, the 100-foot by 200-foot "surface ground sluiced pit" referenced by Barr as the surface exposure of the vein (Ex. J at 12) was noted by Bennett to be perpendicular to the strike of the vein which posed problems in interpreting that as the surface exposure of the vein. (Tr. 1133.) The Administrative Law Judge also found a lack of evidentiary support for Barr's extension of the vein eastward for a total length of 118 feet, noting the decline in value of the samples on the eastward extension of the vein. (Decision at 25; Ex. E.) Appellants have not refuted this evidence.

Bennett, on the other hand, calculated the quantity and quality of resources in the deposit on the basis that the Robert E. vein has a length of 79 feet, 17/ a mining width of 3 (or, alternatively, 4) feet, and a depth of 39.5 feet, while the Stope West Drift has a length of 11 feet, a width of 5.5 feet, and a depth of 5.5 feet. See Ex. 37 at 4; Ex. 38 at 4, 6. The lengths were the observed lengths of the veins sampled by the Government and the claimants. The depths were based on one-half the distance of the strike of the vein, according to the accepted rule-of-thumb. See Tr. 1145; Ex. JJ at 13; Ex. 37 at 4; Ex. 38 at 4, 6. The width was based on the likely width that would be recovered during mining operations.

17/ Bennett concluded that the vein ran for 79 feet on the basis of inclusion of the portion of the vein passing by the stope area. See Tr. 1132-33, 1142; Exs. 19 and E.

Based on these dimensions, Bennett determined the volume and average grade of the mineral material contained in the two structures. In doing so, he used the average value at each sample point across the full mining width (i.e., the weighted average value) and along the full linear extent of the sample's zone of influence. Thus, he multiplied the length of each sample's influence by the weighted average value at that sample point and then divided the total of all of these sums (taken from all of the accepted sample points along the vein structure) by the total length of the structure. The overall average grade also reflected the 90-percent mining and 80-percent milling recovery rates. See Ex. 37 at 1, 2, 4; Ex. 38 at 1, 2, 4, 6.

As such, the Robert E. vein was found to contain 832.1 tons of mineral material, having an average grade of 0.050 oz./ton (3-foot mining width), or 1,109.5 tons of mineral material, having an average grade of 0.041 oz./ton (4-foot mining width). See Ex. 37 at 4. Including C & G sample No. RBE-005 changed the average grade to 0.055 oz./ton (3-foot mining width) and 0.050 oz./ton (4-foot mining width). See Ex. 37 at 5. The Stope West Drift was found to contain 24.4 tons of mineral material, having an average grade of 0.293 oz./ton. See Ex. 38 at 2. Including C & G sample No. RBE-004 changed the length and depth of the vein structure to 11 and 5.5 feet, thus increasing the tonnage to 29.6, with an average grade of 0.291 oz./ton. See Ex. 38 at 4. Including Bureau of Mines sample Nos. RE-13 through RE-16 changed the average grade to 0.167 oz./ton. 18/ See Ex. 38 at 6.

In determining the quality of the mineralization contained in the Robert E. vein and the Stope West Drift, Judge Sweitzer relied on Bennett's assessment. See Decision at 26. He, thus, rejected Barr's analysis, as reflected on Exhibit No. Y, for a number of reasons. The first was that it was based on what he found to be inaccurate reports of the widths of various samples. Judge Sweitzer used Lyda's contemporaneous notes regarding sample widths in all instances. See Decision at 5-6. Appellants have not established any error in this respect.

Judge Sweitzer also disregarded Barr's analysis of the quality of the mineralization because he did not take into account the anticipated width that would be mined. See Decision at 8 (referring to Tr. 1085-86). Judge Sweitzer properly held that the mining width must be taken into account. See United States v. Mavros, supra, at 308, 309, and cases cited therein. The reason is that, in mining a vein, it is not just the vein that is extracted and removed from the mine. Rather, mining will extract material across a certain "mining width," given the type of equipment being used.

18/ Appellants point to the fact that Lyda determined in 1985 that the deposit in the Stope West Drift contains 720 tons, based on dimensions of 20 feet in length, 8.5 feet in width, and 50 feet in depth. See Tr. 139, 1243 (743 tons). This determination was refuted by Lyda at the hearing. See Tr. 140-41.

To the extent that the vein is contained (as it often is) in only a portion of that width at any given point, the mineral value disclosed by a sample at that point will, in the course of mining, be diluted by the additional material on either or both sides of the vein (often containing no mineral values) that must also be extracted. See Tr. 345-47. Thus, in order to determine the true value of the material extracted at a given point so that it can be justly compared to the cost of extraction of that material, the value of the sample must be spread across the full mining width. The appropriate method is to multiply the sample value by the sample width and then divide by the mining width. See Ex. JJ at 7; Ex. 35 at 2. It is evident that Barr failed to do this. See Tr. 1085-86; Exs. 19, B, and Y. Appellants have failed to refute this. 19/ By contrast, Bennett correctly determined the weighted average value across a 3-foot (Robert E. vein) and a 5.5-foot (Stope West Drift) mining width at each sample point. See Ex. 37 at 1-3; Ex. 38 at 1.

Judge Sweitzer also disregarded Barr's analysis of the quality of the mineralization because he did not take into account the area along each vein properly deemed to be influenced by each sample. See Decision at 8 (referring to Tr. 1086, 1090-91). It is well-accepted that any given sample does not just reflect the mineral values at the sample point, but rather will reflect the values for some distance along the vein on either side of the sample point towards the next sample point, i.e., the area or zone of influence. See Ex. 35 at 2; Ex. JJ at 7-8. The accepted rule is that the influence of a particular sample will be deemed to extend one-half the distance to the next sample point along the strike of the vein in either direction. 20/ See Tr. 1086, 1090-91, 1141-42; Ex. 34 at 2; Ex. 35 at 2; Ex. JJ at 7-8.

19/ Appellants argue that they initially did determine a "weighted average." See SOR at 101. However, the method they outline reflects only a determination of the average gold value disclosed within the vein or veins sampled on each claim. It does not determine the average gold values disclosed within the vein or veins and the adjacent material, to the extent of the accepted mining width. They state that they first calculated the total value disclosed at each sample point by multiplying the highest value disclosed at that point by the width of the sample at that point and then, in the case of each claim, divided the total of these results as to all of the accepted samples by the total of the widths of the samples. See SOR at 101. This is borne out by Exhibit Nos. B and Y. There is no consideration of mining width since the samples are only weighted across the sample widths, which are not always equal to the accepted mining width. See SOR at 104; Exs. B and Y.

20/ In averaging the grade within a particular vein, the accepted procedure is to first multiply the length of the area of influence of a particular sample by the average width of the vein in the zone of influence and then by the grade at that point. The results of all of the samples along the vein are then totalled and divided by the sum of the multiples of the lengths of the area of influence and the widths of the vein. See Ex. 35 at 2-3.

Appellants point out that application of the area of influence principle assumes that the grade of the deposit changes at a uniform rate or that the value disclosed at a particular sample point extends halfway to the next sample point. See SOR at 110 (quoting from Ex. JJ at 8). This principle is less helpful when the distribution of mineral values is highly erratic. Judge Sweitzer did not ignore this caveat. He only accepted use of this rule in the case of the No. 5 claim, where he was willing to assume that the values disclosed were relatively consistent. In effect, he gave Appellants the benefit of the doubt, possibly extending the influence of a sample beyond its actual limits. Indeed, it may be true that there are no values on either side of the sample points. Appellants have not established that this was prejudicial error.

It is evident that Barr failed to employ areas of influence in his calculations. See Tr. 1085, 1086; Exs. 19, B, and Y. Appellants have failed to refute this.

Overall, the strongest reason for disregarding Barr's analysis of the quality of the mineralization is the fact that the claimants admittedly focused, in most cases, on only the samples disclosing high gold values, discarding those with low values. See Tr. 750-51, 1134-35, 1153; Ex. Y; Ex. CC. There is no justification for such a selective approach in determining the quality of mineralization in a vein. See Tr. 1041, 1079, 1326.

Appellants contend that some of the samples used to determine the average grade of mineral material on the No. 5 claim should be excluded since they are not representative of the resources on that claim. They, thus, seek the exclusion of sample Nos. 85-014, 85-015, and 89-042, having gold values of a trace (85-014 and 85-015) and 0.016 oz./ton (89-042), because all three samples were taken outside the area of the Robert E. vein and Stope West Drift. See SOR at 74. The Robert E. vein and Stope West Drift areas were considered by both the claimants and the Government to potentially have a valuable mineral deposit. Sample Nos. 85-014 and 89-042 are clearly outside these areas. See Exs. 9, D, and E. Thus, they are not germane to a discovery based on a deposit in these areas. 21/ We note, however, that they were excluded by Bennett in his calculations of the average grade in the Robert E. vein and Stope West Drift. See Exs. 37 and 38. However, although sample No. 89-015 is at the end of the Robert E. vein, we agree that it must be considered in terms of its area of influence within the drift area even though it may be excluded when calculating average grade. 22/ See Exs. D and E. This is how it was employed by Bennett. See Ex. 37 at 3, 4.

21/ To the extent that Appellants predicated a discovery on a deposit embracing a vein strike length of 118 feet as stated in Barr's report (Ex. J at 13-14), these sample points were relevant.

22/ Adjusting the grade and tonnage by eliminating sample No. 89-015, the grade of the resource block would be 0.0683 oz./ton and the resource block would contain 806 tons. This result would not change our conclusion.

Judge Sweitzer accepted Bennett's determination that the No. 5 claim contains 832.1 tons of mineral material at 0.055 oz./ton in the Robert E. vein and 29.6 tons of mineral material at 0.167 oz./ton in the Stope West Drift. See Decision at 31. Appellants argue that he, thus, improperly ignored Bennett's other determination of the resource block in the Stope West Drift, excluding the Bureau of Mines samples, i.e., 29.6 tons of ore containing 0.291 oz./ton. They note that this ore body would meet Judge Sweitzer's cut-off grades for a valuable mineral deposit, i.e., 0.184 and 0.195 oz./ton. See Decision at 31.

Appellants seek to exclude the Bureau of Mines samples. They contend that the Bureau samples generally should be excluded because they were not taken in the presence of the claimants and there is uncertainty as to where and how they were taken and assayed. See SOR at 7 (citing, e.g., United States v. Miller, 91 IBLA 245, 250 (1986)).

We are not persuaded that there is any basis for excluding the Bureau of Mines samples as a rule in determining the quality and quantity of mineralization in the Robert E. vein and Stope West Drift. There is no requirement that they be taken in the claimants' presence in order to be considered valid samples. Although the manner in which the samples were taken and assayed was not introduced into evidence by the Government, the results of the assays of these samples were reported to the claimants by the Bureau of Mines, along with the location and width of the samples, and this evidence was introduced at the hearing by claimants. See Tr. 736-40; Exs. D and Y. 23/ The circumstances of this evidence, thus, largely overcome any difficulties with determining how the samples were taken. See United States v. Burt, 43 IBLA 363, 367-68 (1979). Further, there is a presumption that the samples were correctly taken and assayed by the Government employees. See United States v. Ramsey, 84 IBLA 66, 69 (1984). The burden then devolved to the claimants to demonstrate that the samples were not correctly taken and/or assayed. Appellants failed to carry that burden. Further, in the case of sample Nos. RE-6, RE-15, and RE-16, the evidence is that they were taken from the Robert E. vein or the vein in the Stope West Drift, either in close proximity to another relevant sample (RE-6 taken near sample No. RBE-005) or above the 11-foot level in the stope (RE-15 and RE-16). See Tr. 739; Ex. D. Therefore, these Bureau of Mines samples should be just as indicative of the mineralization to be found in the veins at those points as the other samples, and thus need not be excluded from a determination of the average grade in the resource bodies. See United States v. Copple, 81 IBLA 109, 126 (1984). Other Bureau of Mines samples are properly excluded since they were taken outside the discovery areas, and were in fact excluded by Bennett. See Exs. 37 and 38.

23/ Sharon Clouser testified that Bureau of Mines samples BM 15 and 16 showing no gold were omitted from Exhibit Y because "they weren't showing the value of gold and I was attempting in this value determination to simplify and show not every sample taken on the property but samples with value." (Tr. 740.)

Appellants also contend that the analysis relied upon by Judge Sweitzer improperly excluded sample No. 89-028, reflecting a value of 1.570 oz./ton, in determining the average value of ore in the Stope West Drift. See Ex. 4. The Administrative Law Judge's Decision indicates that he did so because Lyda's testimony and the contemporaneous notes made by Lyda regarding how he took the sample indicate that it was taken along, rather than across, the vein. See Decision at 7, 7 n.3 (referring to Tr. 1359-61 and Ex. 48 at 2 ("4[-foot] chip sample on vein parallel to slickenside")). See also Tr. 56 ("89-028 * * *. Taken parallel to the vein over a length of four feet. Taken along the vein.") We agree with Judge Sweitzer's conclusion where the only contrary evidence is Barr's later recollection regarding the manner of sampling, and Lyda's testimony indicates that Barr may have mistakenly referred to another nearby sample location (No. 89-027). See Tr. 1346-52, 1359-61, 1370; Ex. PP.

Judge Sweitzer concluded that neither of the two resource bodies within the No. 5 claim could be extracted, removed, and marketed at a profit as of the date of the hearing, given the expected revenues to be derived from mining and milling the resource and the costs thereof. 24/

Judge Sweitzer concluded that the proper gold price to use in computing the expected revenues to be derived from mining operations was close to $387/oz. See Decision at 30. He based this conclusion on the fact that $387/oz. was the average price of gold during the 5-year period from 1984 through 1988 and $370/oz. was the price as of May 16, 1990, the day before the hearing began. See Tr. 95-96, 723; Ex. X. He, thus, discounted the claimants' assertion that the applicable gold price should be $412/oz. since this was the average price for the 10-year period from 1979 through 1988 (Ex. X). See Decision at 30. We affirm this finding.

24/ Appellants assert that the Administrative Law Judge erred in admitting into evidence and the Board should generally disregard the Forest Service's assessment of the costs of mining operations since it had failed to provide the claimants with its assessment in response to a May 4, 1990, order of Judge Sweitzer requiring production of documents including reports regarding costs prior to the start of the hearing. We decline to do so. Even assuming that the Forest Service failed to fully comply with Judge Sweitzer's order prior to the start of the hearing, we (like Judge Sweitzer, see Decision at 12) find no prejudice to the claimants. We note that the Government introduced, over the objection of the claimants, its assessment of the costs of mining operations at various times during the hearing that was spread over 7 months. At any time, there was ample additional opportunity for the claimants to review the Forest Service's assessment and to prepare and offer a response thereto. They could have also sought a further continuance of the hearing if they needed more time. They did not do so, and thus cannot claim that they suffered any prejudice. See United States v. Robinson, 21 IBLA 363, 390, 82 I.D. 414, 426 (1975). For these reasons, we will not disregard the Forest Service's assessment of the costs of mining operations.

In arriving at the appropriate gold price to use in a profitability determination, consideration must be given to the "historic range [of prices which] * * * can be justified as a present matter." In Re Pacific Coast Molybdenum Co., supra, at 29, 90 I.D. at 360 (emphasis added). This is done in recognition of the normal volatility of gold prices. See id. at 28-29, 90 I.D. at 359. Thus, we have held that, in determining whether ore can be extracted, removed, and marketed at a profit at a given time (i.e., at the time of the hearing), concern must not be focused exclusively on the price extant at that time, but rather on the price that is likely in the future given past experience with prices. See id. at 29, 90 I.D. at 360.

Gold prices more than 5 years prior to the time of the hearing cannot be considered to reflect the likely price in the future where they include abnormally high prices and there is no evidence that there is a reasonable expectation that the high prices will return, given the downward trend in prices in the years preceding the hearing. In 1987, the price of gold was $448/oz. See Ex. X. By 1988, it had dipped slightly to $441/oz. and, as of the time of the May 1990 hearing, it had dropped to $370/oz. See Tr. 95-96; Ex. X. Further, in the 10 years between 1979 and 1988, it had only once attained the level of $613/oz. in 1980, and never came close to that level in any of the succeeding years. See Ex. X. By looking at the historically highest prices, Appellants failed to take into account the downward trend at the time of the hearing. Moreover, where there is no evidence that prices will return to those high levels, they cannot be utilized in arriving at a price which can be justified "as a present matter." But see United States v. Laczkowski, 111 IBLA 165, 172-73 (1989).

Judge Sweitzer also determined the ordinary labor costs that would be experienced by a typical mining operation on the claim were it to go hire its own work force from the local labor market. This was the proper procedure. See United States v. Whitney, supra, at 84; United States v. Garner, 30 IBLA 42, 67 (1977). These costs would be over $12/hour. See Decision at 29. This was based on the prevailing wage rate in Oregon for miners in December 1990 of $12/hour, plus $5/hour for fringe benefits. See Tr. 1229-30. Indeed, the prevailing rate generally in the western states for miners in August 1990 was $12.11/hour, plus about $4/hour for fringe benefits. See Tr. 1032, 1037, 1258.

Given labor costs of $12.11/hour, the claimants calculate that the cut-off grade for a viable mining operation on the No. 5 claim would be 0.128 oz./ton (with a gold price of $412/oz.). See Claimants' Post-Hearing Brief at 72. The cost component of this calculation was based on the costs itemized in Appellants' Exhibit W. Based on the record developed at the hearing, the Administrative Law Judge was unable to accept the itemization in Exhibit W as an accurate analysis of costs of mining, milling, and beneficiation per ton of mineral resources for several reasons. One of the factors noted by the Administrative Law Judge was the testimony of Bennett regarding omission of labor costs associated with milling of minerals found in claim dumps. Bennett estimated this process would require an additional

1.6 hours of labor per ton which was not included in Exhibit W. Appellants contend on appeal that this item described as dump milling on Exhibit W actually bears no relation to costs for development of mineral in place on the claims, but refers instead to minerals found in dumps on the claims. Although we find that Appellants are correct in this regard, we also find that there is other evidence of record supporting the Administrative Law Judge's conclusion.

Appellants contend that Judge Sweitzer improperly adopted the prevailing wage rate for miners in the western states of $12.11/hour. They assert that he should have used the overall Federal minimum wage rate at the time of the hearing (i.e., $5.64/hour 25/), especially where the work entailed in the present case involves a small mining operation. They assert that a miner would expect to receive less for a small, as opposed to a large, mining operation since less skill is involved. See SOR at 37. The result, according to Appellants, is that the cut-off grade would be 0.082 oz./ton. See SOR at 63.

In conducting a profitability analysis, we have held that the labor costs to be used are those that reflect the "value that an ordinary person would expect to receive for his labor." United States v. Whitney, supra, at 84. This is true whether the work is to be performed by the claimants or hired help. See United States v. White, 72 I.D. 522, 526 (1965), aff'd, White v. Udall, No. 1-65-122 (D. Idaho Jan. 6, 1967), aff'd, 404 F.2d 334 (9th Cir. 1968). As a general proposition, the value that an ordinary person would expect to receive may depend to some extent on the nature of the work to be performed and on the nature of the mining operation (whether large or small). It may also be true, as Appellants assert, that small operators "must, out of economic necessity, pay less [than large operators]." (Appellants' Response to Forest Service Answer at 18.) However, we agree with the Government that the prevailing wage rate adopted by Judge Sweitzer is that applicable in the case of work performed by inexperienced miners whether employed in small or large operations. See Tr. 1229-30. We, therefore, consider the prevailing rate the appropriate rate to use here since the nature of the work is unskilled mining.

Further, although we have recognized the use of the Federal minimum wage rate, including in the case of United States v. Harper, supra (cited by Appellants), we have not held that minimum wage must be used when there is better evidence that a prudent mine operator would expect to pay a higher wage. Indeed, such a rate applies to all workers, regardless of the nature of their work. The minimum wage figure provides a floor to be

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25/ Bennett originally noted that the Federal minimum wage rate in August 1990 was $4.20/hour. See Tr. 1031. Further, he said that, with the inclusion of payments for social security and unemployment and workmen's compensation, the total paid would amount to close to $5.64/hour. See Tr. 1031. This was supported by Lyda. See Tr. 967. Bennett later corrected the minimum wage quote to $4.25/hour, and the resulting total to $5.70/hour. See Tr. 1163; Ex. 47.

used if no better evidence is introduced. If there is better evidence, that evidence should be used. We recognize that there is language in BLM handbooks dealing with validity examinations that endorses use of the minimum wage rate. 26/ See Appendix attached to SOR at 3, 4. However, the BLM manual provisions are not incorrect as long as it is understood that the manual does not dictate the use of minimum wage.

Appellants further assert that labor costs can generally be greatly reduced by engaging in selective extraction techniques. See SOR at 51. Recognizing that selective mining is desirable (given the nonuniform nature of gold deposition) and assuming selective mining is feasible, the claimants offered no evidence regarding how or to what extent labor costs would be reduced. See also United States v. Mannix, supra, at 117. There is no indication that the costs to which Bonn and Barr testified reflect the use of these techniques. Moreover, the only evidence is that costs will increase to some extent. See Tr. 215. This seems likely since before mining can take place the vein would have to be extensively sampled to delineate areas of high grade mineralization and the mining itself would be more labor-intensive. See Tr. 186-87, 224, 228-30. Thus, we agree with Judge Sweitzer that such speculative cost reductions do not alter the Government's profitability determination. See Decision at 31.

So far as the total costs of extracting the mineral material is concerned, Bennett offered a detailed analysis of these costs, as of March 1990. See Exs. 29, 47. The conclusion was that, with a labor cost of $12.11/hour (plus $4.12/hour for social security, etc.), it would cost a total of $61.20/ton to extract the deposit. 27/ See Ex. 47, at 1. This was based on reported labor and supply costs in 1976 of $21.02/foot and $21.10/foot, respectively, taken from the Earll, F.N., Handbook for Small Mining Enterprises (March 1976). 28/ See Ex. 47, at 1; Ex. MM at 4, 6. These costs were updated to March 1990 by a factor of 2.47 (labor) and 1.89 (supplies), given the increase in such costs since 1976. See Ex. 47, at 1.

26/ Appellants also cite the fact that, in the case of two other validity examinations, Government mineral examiners (including Lyda and Bennett) purportedly used the Federal minimum wage. See SOR at 35. Thus, they refer to examinations of placer and lode mining claims in 1977 and 1988. See Exs. NN and OO. We are not persuaded to hold that the Federal minimum wage must be used, even if Government mineral examiners have used that wage on other occasions.

27/ Computations in Exhibit 47 contained corrections from those found in Exhibit 29. (Tr. 1329.)

28/ Bennett based his calculations on estimated 1976 labor and supply costs of $21.02/foot and $21.10/foot. The supply costs used were actually slightly lower than the estimate of $22.10/foot used in the Earll Handbook. See Ex. MM at 4, 6. We have taken his final estimate of costs of $61.20/ton and computed the respective labor and supply costs for March 1990 of $34.61/ton and $26.59/ton. Using a supply cost of $22.10/foot, the total cost would be slightly higher.

The result was $34.61/ton (labor) and $26.59/ton (supplies). The analysis performed by Bennett was not refuted in any significant respect by the claimants.

Rather, the claimants calculated that, in December 1983, the appropriate mining costs would be $7.15/ton (labor) and $3.88/ton (supplies), or a total of $11.03/ton. See Tr. 714, 715; Ex. W. We decline to adopt the claimants' costs. The labor costs were based on the Federal minimum wage of $3.35/hour in December 1983. See Tr. 716-17; Ex. W. Using a labor cost of $12.11/hour (plus $4.12/hour for social security, etc.), the cost would be $34.57/ton. 29/ This is very close to Bennett's estimated labor costs of $34.61/ton.

Clouser concluded that it would take a total of 3.53 hours to mine and mill a ton of mineral material from the underground deposits. See Tr. 711; Ex. W. Bennett stated that mining and milling the underground deposits would entail 3.41 hours for each ton of mineral material. See Ex. 46. Using a figure of 3.5 hours, the total labor costs involved in mining and milling a ton of mineral material would be $56.81 (using a wage of $12.11, plus $4.12/hour for social security, etc.). With respect to the cost of supplies required for mining, the costs projected by claimants included a total of $3.88/ton. Judge Sweitzer correctly noted, however, that the claimants had failed to take into account the costs of installing the infrastructure needed for mining operations, i.e., timber, track, piping, lighting, and ventilation. See Decision at 30. These costs included the costs of bringing the necessary materials to the mine site and putting them in place. While the claimants apparently have a ready source of timber, they did not consider the costs of installing it. See Tr. 84, 720-21. To the extent that there are existing tracks and lighting, the costs attributable to them need not be considered. See United States v. Mannix, supra, at 119. However, the claimants did not consider the costs of additional tracks and lighting that would be used in the course of extending the existing underground workings along the veins. See Tr. 84. Finally, they did not consider at all the costs of piping and ventilation. See Tr. 84. We find the itemization outlined by Contestant (Ex. MM at 4) and relied upon in Bennett's calculations is much more detailed than that set forth by Appellants in Exhibit W and casts considerable doubt on Appellants' figures.

The remainder of the supply costs set forth by Appellants were: $1.54/ton (primary milling), $1.59/ton (off-site milling), and $0.13/ton (hauling). See Tr. 714-15; Ex. W. Judge Sweitzer found that the claimants had erred in their determination of off-site milling costs by underestimating the costs of certain chemicals needed to process the ore. 30/ See

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29/ This was based on the claimants' presumed production of 7.5 tons per 2-man 8-hour shift. See Tr. 719, 875; Ex. W. This translates to the production of a ton of mineral material every 2.13 hours of labor expended. See Ex. 46.

30/ Appellants also argue that Judge Sweitzer failed to consider "other methods of beneficiation." (SOR at 30.) However, they presented little or

Decision at 30. Rather than the 2 cents/pound for sodium carbonate and calcium oxide reported by the claimants (see Ex. W), Bennett determined, by checking with three chemical companies in the area, that the cost would be 35 cents/pound (sodium carbonate) and 32 cents/pound (calcium oxide). See Tr. 1222-23, 1226; Ex. 45. Bennett's testimony is unrefuted. This increases off-site milling costs to $86.55, or $2.16/ton. 31/

Further, as Judge Sweitzer properly noted, labor (and also supply) costs are not the only costs that would be incurred by a mining operation. See Decision at 29. In addition, such an operation would have the costs of the equipment used in mining. Judge Sweitzer properly recognized that the claimants own most of the equipment that they will need and are capable of maintaining it. See Decision at 29; see also Tr. 189, 460, 693, 872; Ex. S. Nevertheless, he held that the costs of obtaining the equipment must still be taken into account. See id. We disagree. Judge Sweitzer relied on United States v. Garner, supra, at 67, in holding that equipment costs must be considered in determining whether mineral could be extracted, removed, and marketed at a profit even where a claimant already owns the necessary equipment. While Garner is to that effect, it was impliedly overruled in United States v. Mannix, supra, at 119, wherein we held that equipment costs need not be considered where the claimant already owns the equipment. 32/

Next, Judge Sweitzer found that the claimants had erred by not including the costs of permitting and bonding their mining and milling operations and the costs of establishing a tailings pond or otherwise disposing of waste rock. See Decision at 31. In the absence of any evidence regarding the costs of disposing of waste rock, we are not in a position to calculate the impact of such costs on the cost per ton of mineral resources. See United States v. Laczkowski, supra, at 176. Bennett testified, however, that the costs of permitting and bonding would likely total $3,680 in the first year, decreasing slightly thereafter. See Ex. 44, at 1. This testimony was unrefuted.

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fn. 30 (continued)
no evidence regarding the feasibility or costs of these other methods. See Tr. 213, 292-95; Ex. W. Thus, there was simply no basis for considering how using such methods would affect the profitability analysis. Also, the claimants stated that their preferred beneficiation method was the "cyanide leach." (Tr. 705.)

31/ The total off-site milling cost reflects the cost of milling 1 ton of concentrate, which is what the claimants reported could be milled each day. See Tr. 706.

32/ Judge Sweitzer also noted that, according to Lyda, some of the claimants' equipment, particularly the Gilson hammer mill, is not adequate for the proposed operation and, thus, a new mill must be purchased. See Decision at 30 (referring to Tr. 966). On appeal, Appellants indicate that they have the necessary mill. See SOR at 21. We agree with the Government that this fact is not in evidence on the present record. Indeed, the evidence before us is that the existing mill does not have the required crushing capability. See Tr. 966. Thus, we are not in a position to accept that the claimants have the appropriate mill.

Accepting for the purposes of our analysis the Appellants' projection of the expenses of supplies for mining, milling, and beneficiation of the resources as modified above, the hours of labor Appellants estimated are required in mining and milling, and a labor cost of $12.11/hour, we find that the cut-off grade is 0.168 oz./ton when calculated on the basis of a price of gold of $387/oz. We find that this exceeds the value of the deposit as established by the evidence. Although the cut-off grade is narrowly above the value established for the 29.6-ton deposit in the Stope West Drift, this difference would become substantial for this small deposit when allowing for the bonding and permitting costs testified to by Bennett. 33/ We find that the 29.6-ton deposit in the Stope West Drift was not economic considering the totality of the evidence. We note that if the deposit were mined it would be mined out in 4 days, using the claimants' projected rate of mining of 7.5 tons of ore per 2-person day. See Tr. 719, 875; Ex. W. The expected return would be 4.94 ounces of gold valued at $1,913 (given a recovery of 0.167 oz./ton and a gold price of $387/oz.), thus leaving a loss after subtracting costs of labor, supplies, bonding, and permitting.

We, therefore, must conclude that the claimants failed to demonstrate that there was disclosed on any of the subject mining claims minerals of sufficient quality in sufficient quantity so as to justify a prudent man in the further expenditure of his labor and means with a reasonable prospect of success in developing a paying mine. 34/

Appellants have made numerous and detailed arguments in support of their appeal in this case. To the extent that they are not specifically discussed herein, those arguments have been considered and rejected as

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33/ In Sedgwick v. Parker. 27 IBLA 256, 258 (1976), the Board adopted a decision of Administrative Law Judge Robert W. Mesch, which held that a 10-ton deposit containing gold and other valuable minerals was not sufficient to validate a mining claim where the expected total recovery from mining the deposit was on the order of $440 to $540. See id. at 265-66. Judge Mesch stated that a claimant must demonstrate more than an "insignificant" mineral deposit that can be extracted at a profit in order to satisfy the purpose of the mining law, which was to encourage the exploitation of a valuable mineral deposit by rewarding a claimant with a patent (see United States v. Coleman, supra, at 602), such that the end result is a "'substantial assurance that there will be a compensating public gain in the form of an increased supply of available mineral resources.'" Id. at 266 (quoting from Barton v. Morton, supra, at 292). We adhere to the holding in Sedgwick. See also United States v. Becker, 33 IBLA 301, 307 (1978); United States v. Gardener, 18 IBLA 175, 177, 194-95 (1974), aff'd, Gardener v. Secretary of the Interior, No. 75-1413 (C.D. Cal. June 16, 1975).

34/ A discovery was not shown, in the case of the Nos. 1 through 4 and 6 claims, either at the time of withdrawal of the land (Jan. 1, 1984) or at the time of the hearing, and, in the case of the No. 5 claim, at the time of the hearing.

either unsupported by the evidence or not in accordance with applicable law. See United States v. Foresyth, 100 IBLA 185, 254, 94 I.D. 453, 491 (1987); United States v. Wood, supra, at 320, 87 I.D. at 639.

Therefore, we conclude that Judge Sweitzer properly held, in his Decision, that the claimants had failed to overcome the Government's prima facie case that none of the Robert E. Nos. 1 through 6 lode mining claims contains a valuable mineral deposit, and thus declared them null and void.

Accordingly, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 C.F.R. § 4.1, the Decision appealed from is affirmed as modified by this opinion.

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C. Randall Grant, Jr.
Administrative Judge

I concur:

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Franklin D. Arness
Administrative Judge